Lisbon Financial Mathematics 2013

3rd Edition - Autumn Meeting

Nonlinear PDE's in Finance – numerical methods and applications

November 12-13, 2013

Meeting organised by the

Financial Mathematics Group of **CEMAPRE - Centre for Applied Mathematics and Economics**

Location: ISEG, Universidade de Lisboa (Building Quelhas-6, floor 4)

- **Mini course (4,5 h) – Carlos Vázquez Cendon, University A Coruña, Spain**

  Title: *Numerical methods for nonlinear PDEs in finance*

  Abstract: The aim of the course is to present a variety of numerical techniques to solve PDE models arising in quantitative finance problems. For this purpose, the course starts with the classical models for European and American vanilla options in order to introduce numerical methods for the linear Black-Scholes equation and the nonlinear free-boundary problem associated to early exercise opportunity. The rest of the course concerns to several examples of more complex nonlinear PDE models and numerical methods related to the consideration of transaction costs, fixed rate morgages and pension plans with early retirement

  Program of the course:
  - Introduction to PDE models in finance
  - Numerical methods for classical financial options
  - Nonlinear PDEs in the presence of transaction costs and numerical methods
  - A nonlinear PDE model for fixed rate morgages and numerical methods
  - A free boundary model for pension plans with early retirement

- **Talk - Magdalena Zitnanska, Commenius University, Bratislava, Slovakia**

  Title: *Option Pricing*

- **FinMath PhD Student communications**

Schedule

	Tuesday, 12 Quelhas, floor 4, Room: BES		Wednesday, 13 Quelhas, floor 4, Room: Anf. 3
09.00 – 10.00			**Carlos Vázquez**
10.00 – 10.30			*Coffee break*
10.30 – 11.30			**Carlos Vázquez**
11.30 – 12.30			**Informal discussions**
12.30 – 14:00			*Lunch Break*
14:00 – 15:30	**Carlos Vázquez**		**FinMath PhD students**
15:30 – 16:00	*Coffee break*		*Coffee break*
16:00 – 17:00	**Carlos Vázquez**		**FinMath PhD students**
17:00 – 17:40	**Magdalena Zitnanska**		**FinMath PhD students**

Organizers

Fernando Gonçalves • João Guerra • Manuel Guerra • Maria do Rosário Grossinho • Nicola Cantarutti

Framework

- *STRIKE - Novel Methods in Computational Finance* (2013-2016). ITN- Marie Curie Action
- *Analysis of Nonlinear Partial Differential Equations in Mathematical Finance* (2013-2014). Transnational Cooperation - Scientific Cooperation Agreement Between Portugal and Slovakia.

Sponsors

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